THE CLAIMS

1. An implant for use in the spinal column, said implant comprising:

(a) a body portion having a length, a width and a depth, and configured to be insertable between first and second cut bone segments, the body portion having an outer surface, and an inner surface defining a substantially hollow portion, the body portion further having first and second ends which communicate with said hollow portion, the first and second ends comprising bone engaging portions; wherein at least one of the bone engaging portions comprises a cutout configured and adapted to engage and retain at least one of the first and second cut bone segments.

2. The implant of claim 1 wherein the perimeter of the outer surface of the implant is a substantially geometric shape.

3. The implant of claim 2 wherein the geometric shape is an ellipse having a width and a depth.

4. The implant of claim 1 wherein the length ranges from about 11.5 to about 15.5 millimeters, the width ranges from about 8.0 to about 9.0 millimeters and the depth ranges from about 5.5 to about 6.5 millimeters.

5. The implant of claim 2 wherein the geometric shape is a circle.

6. The implant of claim 1 wherein the implant comprises a substantially tubular shape.

7. The implant of claim 1 wherein the implant is formed of bone allograft material.

8. The implant of claim 7 wherein at least a portion of at least one said bone engaging portion is comprised of demineralized cortical bone.

9. The implant of claim 7 further comprising first and second bone flaps, the

flaps connecting to and extending from the body portion at the first and second ends, each said flap further comprising at least one hole suitable for receiving a bone fastener for securing said implant to said first and second bone segments.

10. The implant of claim 9 wherein at least one of the first and second bone flaps is flexible.

11. The implant of claim 9 wherein at least one of the first and second bone flaps is comprised of demineralized cortical bone.

12. The implant of claim 9 wherein at least one of the first and second bone flaps comprises a notch in the region where the at least one bone flap connects to the body portion.

13. The implant of claim 7 wherein said inner surface is defined by the intermedullary canal of the donor bone.

14. The implant of claim 7 wherein said inner surface is configured such that the volume of said substantially hollow portion is greater than the intermedullary canal of the donor bone.

15. The implant of claim 1 further comprising:

(a) a longitudinal axis, and

(b) the at least one cutout further comprises a centerline running parallel to the implant longitudinal axis dividing said ends,

wherein the centerline of the at least one cutout is offset from the longitudinal axis.

16. The implant of claim 1 wherein the at least one cutout has a substantially concave arcuate shape.

17. The implant of claim 1 wherein both bone engaging portions comprise cutouts and further wherein both cutouts have a substantially concave arcuate shape.

18. The implant of claim 1 wherein the at least one cutout comprises at least two angled faces.

19. The implant of claim 1 further comprising at least one surface defining a hole in communication with said outer surface and said inner surface, suitable for attaching a suture to secure said implant to at least one of said first and second bone segments.

20. The implant of claim 1 wherein the implant is fabricated of biocompatable metal.

21. The implant of claim 1 wherein the implant is fabricated of biocompatable polymer.

22. The implant of claim 1 wherein at least one of the bone engaging portions comprises surface projections configured to retain said implant within said first and second bone segments.

23. An implant for use in the spinal column, said implant comprising:
a body portion having a longitudinal axis and configured to be insertable between first and second bone segments, the body portion having an outer surface, and an inner surface defining a substantially hollow portion, said body portion further having first and second ends which communicate with said hollow portion, said first and second ends comprising bone engaging portions; and said first and second bone engaging portions comprise concave cutouts configured and adapted to engage and retain said first and second bone segments, the cutouts further each comprising a centerline running parallel to the implant longitudinal axis and dividing each the cutouts, wherein the centerline of the cutout of the first end is offset from the implant longitudinal axis in one direction, and the centerline of the cutout of the second end is offset from the implant longitudinal axis in the opposite direction.

24. The implant of claim 23, wherein at least one cutout further comprises at least two angled faces.

25. The implant of claim 23 wherein the at least one cutout has a substantially

concave arcuate shape.

26. The implant of claim 23 wherein at least one of the bone engaging portions comprises surface projections configured to retain said implant within said first and second bone segments.

27. The implant of claim 23 wherein the implant is formed of bone allograft material.

28. An implant for use in the spinal column, the implant comprising:

(a) a body portion having an inner side region comprising an inner side length and configured to be insertable between first and second bone segments, the body portion having first and second ends, at least one of the first and second ends comprising a bone engaging portion to engage at least one of the first and second bone segments,

wherein at least one of the first and second bone engaging portions is comprised of demineralized allograft material.

29. The implant of claim 28 wherein the body portion further comprises a wall having an outer surface, and an inner surface defining a substantially hollow portion, wherein the hollow portion is in communication with the first and second ends.

30. The implant of claim 29 wherein said hollow portion is defined by the intermedullary canal of the donor bone.

31. The implant of claim 29 wherein said inner surface is configured such that the volume of said substantially hollow portion is greater than the intermedullary canal of the donor bone.

32. The implant of claim 28 wherein the at least one of said first and second bone engaging portions further comprises surface projections configured to retain said implant within said first and second bone segments.

33. The implant of claim 32 wherein the surface projections comprise saw-tooth ridges.

34. The implant of claim 32 wherein the surface projections comprise individual pyramidal teeth.

35. An implant for use in the spinal column, said implant comprising:

(a) first and second plates connected by an intermediate portion whose thickness is smaller than the height of the first and second plates, the first and second plates comprising bone engaging portions for engaging first and second bone segments produced during a laminoplasty procedure,

wherein the implant is configured to be insertable between first and second bone segments produced during a laminoplasty procedure.

36. The implant of claim 35 wherein at least one of the bone engaging portions comprises an arcuate surface configured to retain said first and second bone segments.

37. The implant of claim 35 wherein the bone engaging portions are angled with respect to each other.

38. The implant of claim 35 wherein the first and second plates and the intermediate portion form a substantially U-shaped implant.

39. The implant of claim 35 wherein the intermediate portion further comprises a hollow suture attachment portion.

40. The implant of claim 35 wherein the implant is comprised of a biocompatable metal.

41. The implant of claim 35 wherein the implant is comprised of a biocompatable polymer.

42. The implant of claim 35 wherein the implant is comprised of cortical bone allograft.

43. The implant of claim 42 wherein at least one of the bone engaging portions are comprised of demineralized bone.

44. A method for providing a desired distance between first and second cut bone ends of the spine, comprising the steps of:

(a) cutting at least one segment of a vertebra to produce first and second cut bone ends;

(b) separating the first and second cut bone ends to define a space therebetween;

(c) providing a plate comprising a body portion having a length greater than the space defined by the separation of said first and second cut bone ends, the body portion further having first and second ends, said first and second ends each comprising bone engaging portions, each of the bone engaging portions comprising at least one fastener receiving portion,

wherein the plate is permanently deformable to allow a surgeon to conform the bone engaging portions to the adjacent cut bone ends;

(d) engaging said bone engaging portions with said first and second cut bone ends;

(e) providing at least two bone fasteners;

(f) inserting at least one said bone fastener into the fastener receiving portion of each bone engaging portion; and

(g) engaging the at least one bone fasteners with said cut bone end.

45. The method of claim 44 further comprising the step of deforming the plate to conform the bone engaging portions to the adjacent cut bone ends.

46. The method of claim 44 wherein the step of providing a plate comprises providing a plate having a body comprising a plurality of holes suitable for receiving bone fasteners.

47. A method for providing a desired space in the spinal canal, comprising the steps of:

(a) cutting a first lamina all the way through to produce a first cut bone end having a first bone outer surface and a second cut bone end having a second bone outer surface;

(b) cutting a second lamina to form a hinge therein;

(c) providing an implant having a body portion comprising a length and a longitudinal axis, the body portion having first and second ends,

the first and second ends comprising bone engaging portions, at least one of the bone engaging portions comprising an arcuate cutout, the cutout comprising a centerline running parallel to the implant longitudinal axis dividing the first and second ends,

wherein the cutout centerline is offset from the longitudinal axis;

(d) separating the first and second cut bone ends a sufficient distance to accept the implant;

(e) positioning the implant between the first and second cut bone ends; and

(f) contacting at least a portion of each of the first and second cut bone ends with the bone engaging portions.

48. The method of claim 47 further comprising the steps of:

(a) providing a plate having first and second ends, the first and second ends further comprising bone engaging portions, the bone engaging portions further comprising bone receiving portions, wherein the length of said plate is greater than the length of said body portion and is sufficient to allow the first and second bone engaging portions to engage said first and second bone segments;

(b) placing said plate over the implant such that the plate covers at least a portion of the implant, and the bone screw receiving portions contact said first and second bone segments;

(c) inserting at least one bone screw within each bone screw receiving portion of said plate; and

(d) engaging each at least one bone screw with the surface of each said first and second bones.

49. A method for providing a desired space in the spinal canal, comprising the steps of:

(a) cutting a first lamina all the way through to produce a first cut bone end having a first bone outer surface and a second cut bone end having a second bone outer surface;

(b) cutting a second lamina to form a hinge therein;

(c) providing an implant having a body portion comprising a length and a longitudinal axis, the body portion having first and second ends, the first and second ends comprising bone engaging portions,

wherein the implant is formed of a bone allograft material, and at least one of the bone engaging portions is comprised of demineralized bone;

(d) separating the first and second cut bone ends a sufficient distance to accept the implant;

(e) positioning the implant between the first and second cut bone ends; and

(f) contacting at least a portion of each of the first and second cut bone ends with the bone engaging portions.

50. The method of claim 49 further comprising the steps of:

(a) providing a plate having first and second ends, the first and second ends further comprising bone engaging portions, each bone engaging portion further comprising a bone screw receiving portion, wherein the length of said plate is greater than the length of said body portion and is sufficient to allow the first and second bone engaging portions to engage said first and second bone segments;

(b) placing said plate over the implant such that the plate covers at least a portion of the implant, and the bone screw receiving portions contact said first and second bone segments;

(c) inserting at least one bone screw within each bone screw receiving portion of said plate; and

(d) engaging each at least one bone screw with the surface of each said first and second bones.